Prominent 946 lines induced from flashlamp pumped Nd: YAG rod

Abstract :

Spectroscopic properties of Nd:YAG laser rod pumped by a new developed flashlamp is investigated. A new power supply is constructed to power xenon flashlamp. A 1 at.% Nd:YAG laser rod is transverselypumped by the flashlamp and stabilized by a water cooling system operated at ambient temperature of 20°C. The absorption and emission spectrum of the flashlamp pumped Nd:YAG rod is analyzed via spectroscopy technique. The peak absorption line is identified to be at 882 nm. The dominant emissionline obtained from transition $^4F_{3/2} \rightarrow {}^4I_{9/2}$ comprised of quasi three level laser at 938.5 and 946 nm with the corresponding cross section of $2.42\times10^{-19}cm^2$ and $3.04\times10^{-19}cm^2$ respectively. This cross section is found almost ten times greater than the usual one.